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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,791	06/14/2006	Laurent Pain	292393US2PCT	5941
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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
TRAN, BINH X				
ART UNIT		PAPER NUMBER		
1792				
NOTIFICATION DATE		DELIVERY MODE		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com

oblonpat@oblon.com

jgardner@oblon.com

### Office Action Summary

**Application No.**

10/582,791

**Applicant(s)**

PAIN, LAURENT

**Examiner**

BINH X. TRAN

**Art Unit**

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 May 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 27-42 and 46-61 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 53-61 is/are allowed.
- 6) ☒ Claim(s) 27-30, 32-34, 40-42 and 46-52 is/are rejected.
- 7) ☒ Claim(s) 31 and 35-39 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 27-30, 32, 40-42, 46-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mangat et al. (US 2003/0039923) in view of Pierrat (US 2004/0081896) .

Respect to claim 27, Mangat disclose a correction method for correction an erroneous design made in a first thin layer including at least one first engraved sub-layer (55) including the erroneous design and at least one second sub-layer (40) located between a substrate and the first sub-layer (55) (See Fig 4, paragraph 0019-0020), the method comprising:

depositing a second thin layer (70) on the first thin layer (55) (see Fig 5, paragraph 0021);

etching the second sub-layer (40) through the first sub-layer (55) (Fig 6 paragraph 0022).

Mangat fails to disclose engraving or lithography of the second thin layer, as a function of a desired corrections or corrections. In a method for mask repair, Pierrat

discloses depositing a second thin film layer (108 or 201) on the first thin film layer (102A) (See Fig 1C, 2A, paragraph 0031, 0035); engraving or lithography in the second thin layer (108) as a function of a designed correction in order to eliminate isolate defects and significantly reduce the size of the defects proximate to the desired shapes on the mask (Fig 1D, 1E, 2B, 2C, paragraph 0031-0032, 0036-0037, Fig 5 step 507-508, abstract). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Mangat in view of Pierrat by engraving or lithography the second thin film because it helps to eliminate isolate defects and significantly reduce the size of the defects proximate to the desired shapes on the mask.

Respect to claim 28, both Mangat and Pierrat disclose the desired correction including an addition of one or more pattern (Mangat's Fig 5-6, Pierrat's fig 1D-1E). Respect to claim 29, Pierrat discloses one or more patterns are missing and the lithography including reproduce in the second thin layer (108) of the missing patterns (Pierrat's Fig 1D-1E).

Respect to claim 30, Pierrat discloses etching the first sub layer (107) through the second thin layer (108A) after the lithography step (See Fig 1D-1F). The step of etching the second sub-layer has been discussed above under Mangat's reference (Fig 6, paragraph 0022).

Respect to claim 32, both Mangat and Pierrat disclose the correction including removing one or more patterns (Mangat's Fig 5-6; Pierrat's Fig 1E-1F). Respect to claim 40, Mangat discloses Mangat discloses removing the first sub-layer (50/55) after the etching of the second-sublayer (40) through the first layer (Fig 5-6, paragraph 0022).

Respect to claim 41, Mangat discloses the first sub-layer (50) is based on a conductive material (i.e. tantalum containing material) and the second sub-layer (40) comprises insulating or semiconductor material (silicon oxynitride) (paragraph 0018). Respect to claim 42, Mangat discloses the first sub-layer (55) is a sacrificial layer (See fig 5-6, layer 55 is completely removed). Respect to claims 46-47, both Mangat and Pierrat disclose the second thin film layer is a photoresist layer (read on "a dielectric layer" or "resin or polymer layer"). Respect to claims 48-50, Pierrat discloses the lithography is carried by direct writing using UV beam, x-ray (paragraph 0054

3. Claims 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mangat and Pierrat as applied to claims 27-30, 32, 40-42, 46-50 above, and further in view of Fisch et al. (US 6,777,137).

Respect to claim 33, Mangat and Pierrat fail to disclose the engraving or lithography in the second thin layer leaving one or more blocks filling the patterns in excess. Fisch teaches to fill the excess pattern (124, 224) during lithography or engraving process in order to fix the defect (col. 7-10, Fig 1C-1E, Fig 2B-2E). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Mangat and Pierrat in view of Fisch by filling the patterns in excess because it helps to eliminate or reduce the clear defect.

Respect to claim 34, Mangat and Pierrat teaches the correction including adding one or more missing patterns. Fisch teaches to eliminate one or more patterns in excess (124, 224) using the fill material. It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Mangat and Pierrat in view of

Fisch by eliminate one or more other patterns in excess because helps to eliminate or reduce the clear defect.

4. Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mangat and Pierrat as applied to claims 27-30, 32, 40-42, 46-50 above, and further in view of Liang et al. (US 2005/0109278 A1).

Respect to claim 51, Mangat and Pierrat fails to disclose the beam being controlled by a digital device associated with a data medium including data relative to the erroneous design and to a desired corrected design. Liang teaches that the beam being control by a system control (i.e. digital device) associated with a data medium (data management module) including data relative to the erroneous design and a desired corrected design (Fig 2, paragraph 0020-0022). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Pierrat in view of Liang by using a digital device associated with a data medium to control the beam because it helps to locate and repair the defect.

5. Claims 51-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mangat and Pierrat as applied to claims 27-30, 32, 40-42, 46-50 above, and further in view of Stewart et al. (US 2004/0151991).

Respect to claim 51, Pierrat fails to disclose the beam being controlled by a digital device associated with a data medium including data relative to the erroneous design and to a desired corrected design. Stewart that the beam being control by a system controller (36) (i.e. digital device) associated with a data medium (38) including data relative to the erroneous design and a desired corrected design (Fig 1, fig 3,

paragraph 0045-0049). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Mangat and Pierrat in view of Stewart by using a digital device associated with a data medium to control the beam because it helps to determine and repair the defect.

Respect to claim 52, Mangat discloses a first means (laser 110) for producing at least one of lithography beam (Fig 8). However, Mangat and Pierrat fail to disclose a second means and a third means. In an photolithography apparatus, Stewart teaches a second means (38) for processing data relative to an erroneous design (i.e. defect) formed in a thin layer and data relative to desired corrected design, and for producing correction data following such process; and a third means (36 or 45) for controlling the first means (ion beam), from correction data produced by the second means (38) (Fig 1, Fig 3, paragraph 0045-0049). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Mangat and Pierrat in view of Stewart by having a second and third means because it helps to determine the defect and repair the defect.

***Allowable Subject Matter***

6. Claims 31, 35-39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
7. Claims 53-61 are allowed.
8. The following is a statement of reasons for the indication of allowable subject matter: The cited prior arts fail to disclose the step of removing the second thin film

after etching of the first sub-layer through the second thin film layer; or depositing a third thin layer on the first sub-layer and second lithography in the third thin layer leaving blocks filling the pattern in excess in combination with all other limitations in the claims.

***Response to Arguments***

9. The applicants amendment filed on 5-12-2008 is sufficient to overcome the examiner previous 35 USC 112, 2<sup>nd</sup> paragraph rejection.

In the previous office action, the examiner indicated that claim 31 would be allowable if rewritten in independent form. In the amendment filed on 05-12-2008, the applicants states "allowable claim 31 is rewritten in independent form as new Claim 53". The examiner disagrees with this statement. The examiner recognizes that claim 53 is an independent claim and contains most of the limitation in claim 31. However, the scope of claim 53 is not identical with the scope of claim 31. Specifically, claim 31, requires that the step of removing the second thin layer after the etching d) of the first sub-layer through the second thin layer and prior to etching c). Claim 31 also requires that the etching the first sub-layer through the second thin layer after said step b and prior the etching step c) (i.e. limitation of claim 30 because claim 31 depends on claim 30). It is noted that applicants fail to disclose that all the step in claim 53 must be performed in the recited order. It is possible that the step "c) etching the second sub-layer through the first sub-layer" is performed before the step of "removing the second thin film" in claim 53. If the applicants argue that the scope of claim 31 and 53 is identical, then claim 53 should be objected under 37 CFR 1.75 as being substantially duplicate of 35 (Please see MPEP §706.03(k). Upon further review, the examiner agrees that claim



53 is allowable. However, as stated above, the scope of claim 53 is different from the scope of claim 31 (i.e. claim 31 is not rewritten in independent form as new claim 53 as stated by applicants, claim 53 is broader than claim 31 because applicants fail to recite that all the step in claim 53 must be performed in the recited order).

The applicants further stated "allowable Claim 35 is rewritten in independent form as new claim 57". The examiner disagrees with this statement. The scope of claim 35 is different from the scope of claim 57. First, in previous office action the examiner clearly stated that claim 35 would be allowable if rewritten in independent form including all of the limitations of the base claims and any interview claims. Claim 35 requires the limitation "the correction including adding one or more missing patterns, then eliminating one or more other pattern in excess" (i.e. the limitation of claim 34 because claim 35 depends on claim 34). It is noted that applicants delete this limitation of claim 34 when rewriting claim 57 in independent form. Second, claim 35 requires the step of performed in a certain order (i.e. after the engraving or lithography b) and prior to the etching step c). Applicants fail to disclose that all the steps in claim 57 must be performed in the recited order. Upon further review, the examiner agrees that claim 57 is allowable. However, as stated above, the scope of claim 57 is different from the scope of claim 35 (i.e. claim 35 is not rewritten in independent form as new claim 57).

Respect to previous 35 USC 103(a) rejection, the applicants state "The applicants respectfully disagrees because metal 70 is not a thin layer, and it not deposited on layer 55. Instead metal 70 is formed on layer 40". The examiner disagrees with this statement. First, the examiner interprets metal 70 is a thin layer

because applicants fail to define the dimension of the thin layer. Second, Mangat clearly show that metal layer 70 is deposited on the sidewall of layer 55 (see Fig 55, read on the limitation "depositing a second thin layer on the first thin film"). There is no limitation is the claim which require that the second thin film must be deposit on top of the first thin film.

The applicants further state "the Office Action acknowledges that the Mangat et al. publication fails to disclose the claimed step of etching the second sub-layer through the first sub-layer". The examiner strongly disagrees with this statement. The examiner never states that Mangat fails to disclose the step of etching the second sub-layer through the first sub-layer. In the previous office action, the examiner clearly state that Mangat teaches as shown in Figure 6 and paragraph 0022 (See page 4 of previous office action). In the previous office action, the examiner acknowledged that Mangat fails to disclose engraving or lithography of the second thin layer as a function of a desired correction or corrections (See page 4 of previous office action). The examiner turns to Pierrat for this limitation.

### ***Conclusion***

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BINH X. TRAN whose telephone number is (571)272-1469. The examiner can normally be reached on Monday-Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Binh X Tran  
Primary Examiner  
Art Unit 1792

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